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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/550,457

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Yumi Muroi

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EXAMINER

KEMMERLE III, RUSSELL J

ART UNIT

PAPER NUMBER

1791

MAIL DATE

DELIVERY MODE

03/31/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/550,457	<b>Applicant(s)</b> MUROI ET AL.	
	<b>Examiner</b> RUSSELL J. KEMMERLE III	<b>Art Unit</b> 1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 30 December 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 3,9 and 10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 3,9 and 10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                       | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>11/26/08</u> .  | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

#### ***Information Disclosure Statement***

The information disclosure statement filed 26 November 2008 fails to comply with 37 CFR 1.98(a)(3) because it does not include a concise explanation of the relevance, as it is presently understood by the individual designated in 37 CFR 1.56(c) most knowledgeable about the content of the information, of Japanese Patent Publication 57-022171 that is not in the English language. It has been placed in the application file, but the information referred to therein has not been considered.

Additionally US Patent 4,354,991 has been marked as not being considered because it was previously included on the PTO-892 form mailed 14 November 2007.

The information disclosure statement filed 16 March 2009 fails to comply with 37 CFR 1.98(a)(1), which requires the following: (1) a list of all patents, publications, applications, or other information submitted for consideration by the Office; (2) U.S. patents and U.S. patent application publications listed in a section separately from citations of other documents; (3) the application number of the application in which the information disclosure statement is being submitted on each page of the list; (4) a column that provides a blank space next to each document to be considered, for the examiner's initials; and (5) a heading that clearly indicates that the list is an information disclosure statement. The information disclosure statement has been placed in the

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application file, but the information referred to therein has not been considered. No PTO-1449 (or similar form) was included to be initialed by the Examiner.

***Claim Rejections - 35 USC § 103***

Claims 3, 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ichikawa (JP Patent Publication 2002-201082, as discussed in applicant's current specification, identified in the previous Office Action as "Shuichi") in view of Suzuki (US Patent 4,354,991), Kani (JP Patent Publication 61-026565) and Arakawa (JP Patent Publication 61-291461). Citations to Kani and Arakawa refer to where that information can be found in the translations accompanying the previous Office Action.

Ichikawa discloses a method of making a silicon carbide (SiC) honeycomb structure by mixing and kneading a combination of SiC, metal Si, an organic binder and an alkaline earth metal to form a clay. This clay is then shaped into a honeycomb structure, heated to remove the binder, then fired to form the finished body (see applicant's current specification, page 1).

Ichikawa as discussed by the applicant does not disclose that the firing be performed in a protective container made of SiC, or that an aluminum containing solid also be placed in the container during firing.

Suzuki discloses a method of making a SiC body where the shaped SiC body is fired in a container made of SiC, in order to control the atmosphere during firing and create a finished product having a superior surface (Col 6 lines 20-33).

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Kani discloses a method of making a SiC body that involves molding and sintering a shaped SiC body, where the sintering occurs with an aluminum (Al)-containing substance present with the body (page 2, claim 1). Kani further discloses that this can be achieved by placing a lump (i.e., a block body) of Al metal with the green SiC body in a crucible with a lid during sintering, and the quantity of Al should be from 0.01-5% by weight based on the weight of the SiC body (paragraph spanning pages 6-7). While Kani discloses specific examples using Al metal, Kani also says that any Al-containing material which will produce Al vapor during sintering would work (paragraph bridges pages 6 and 7), although not specifically disclosing the use of aluminum in oxide form.

Arakawa discloses a process for firing a SiC body in the presence of an aluminum vapor source, specifically mentioning the use of aluminum oxide as the vapor source (page 5).

It would have been obvious to one of ordinary skill in the art, at the time of invention by applicant, to have modified the method taught by Ichikawa, by firing the ceramic in a SiC crucible having an Al-containing material present in the crucible during firing. This would have been obvious because Suzuki discloses that placing the body in a SiC crucible during firing creates a desirable product without the need for hot pressing, and Kani discloses that placing an Al-containing material in the crucible during firing produces the desired result of Al as a sintering aid without having the Al as an impurity in the final piece. It would have been further obvious to use aluminum oxide as

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the vapor source since Kani calls for any material that will produce Al vapor during firing and Arakawa discloses that aluminum oxide is such a material.

While the prior art discussed above does not specifically state the water absorption of the alumina body used, the selection of a value equal to or above 0.05%, based on the similarities between the currently described invention and that of the prior art it appears that such a water absorption level would be found in the prior art.

In the alternative, it appears that the selection of such a water absorption amount would be well within the abilities of one skilled in the art to achieve through routine experimentation. The water absorption is easily controlled by those skilled in the art by changing factors such as the composition and porosity of the body, and therefore to reach the claimed limitation would require nothing more than routine experimentation in order to optimize the process.

Referring to claim 9, the references as discussed above do not discuss a specific separation distance between the Al-containing body and the SiC body. However, one of ordinary skill in the art would know that the Al-containing body should be close to the SiC body in order for the Al vapor to easily reach the body, but not in contact with the SiC body as that would cause them to sinter together. Therefore optimizing the placement of the articles to within 50 cm of each other would be within the ability of one skilled in the art to create a situation where the Al vapors act on the SiC body during sintering, but they two materials do not sinter to each other. “[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation.” In re Aller, 220 F.2d 454, 456,

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105 USPQ 233, 235 (CCPA 1955) (Claimed process which was performed at a temperature between 40°C and 80°C and an acid concentration between 25% and 70% was held to be prima facie obvious over a reference process which differed from the claims only in that the reference process was performed at a temperature of 100°C and an acid concentration of 10%.); See also *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980) (prior art suggested proportional balancing to achieve desired results in the formation of an alloy).

Referring to claim 10, as discussed above, Kani discloses a lump (i.e., a block body) of Al metal with the green SiC body in a crucible with a lid during sintering, and the quantity of Al should be from 0.01-5% by weight based on the weight of the SiC body (paragraph spanning pages 6-7).

### ***Response to Arguments***

Applicant's arguments with respect to claim 3 has been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to RUSSELL J. KEMMERLE III whose telephone number is (571)272-6509. The examiner can normally be reached on Monday through Thursday, 7:00-5:00 EST.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on 571-272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/R. J. K./  
Examiner, Art Unit 1791

/Eric Hug/  
Primary Examiner, Art Unit 1791